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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/813,201	03/30/2004	Andrew Zisserman	13058N/040618	5128

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NASHVILLE, TN 37219-2376

EXAMINER

PANNALA, SATHYANARAYA R

ART UNIT	PAPER NUMBER
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2164

DATE MAILED: 11/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/813,201	Applicant(s) ZISSERMAN ET AL.	
	Examiner Sathyanarayan Pannala	Art Unit 2164	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☒ Claim(s) 1,9,17-18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>10/27/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Application No. 10/813201 filed on 3/30/2004 has been examined. In this Office Action, claims 1-18 are pending.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 10/27/2004 are in compliance with the provisions of 37 CFR 1.97 and have been considered by the examiner.

Drawings

3. The drawings are objected to because they fail to show necessary textual labels of features or symbols in Figs. 1-2 as described in the specification. For example, placing a label for dotted-line block, "patch feature extraction method" instead of "see figures 3 & 4 for more details" of Fig. 1, would give the viewer necessary detail to fully understand this element at a glance. Another example, what is in right hand side block and cannot be readable of Fig. 1. A **descriptive** textual label for **each numbered element** in these figures would be needed to fully and better understand these figures without substantial analysis of the detailed specification. Any structural detail that is of sufficient importance to be described should be shown in the drawing. Optionally,

applicant may wish to include a table next to the present figure to fulfill this requirement.

See 37 CFR 1.83. 37 CFR 1.84(n)(o) is recited below:

"(n) Symbols. Graphical drawing symbols may be used for conventional elements when appropriate. The elements for which such symbols and labeled representations are used must be adequately identified in the specification. Known devices should be illustrated by symbols which have a universally recognized conventional meaning and are generally accepted in the art. Other symbols which are not universally recognized may be used, subject to approval by the Office, if they are not likely to be confused with existing conventional symbols, and if they are readily identifiable.

(o) Legends. Suitable descriptive legends may be used, or may be required by the Examiner, where necessary for understanding of the drawing, subject to approval by the Office. They should contain as few words as possible."

4. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

5. The summary of the invention is not included in the specification. A summary is required that is clearly indicative of the invention to which the claims are directed. See MPEP §§ 608.01(d).

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (e) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (f) BRIEF SUMMARY OF THE INVENTION.
- (g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (h) DETAILED DESCRIPTION OF THE INVENTION.
- (i) CLAIM OR CLAIMS (commencing on a separate sheet).
- (j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Claim Objections

6. Claims 1, 9, 17-18 are objected to because of the following informalities:
- Misspelled the words are "therebetween", "modelled" and examiner considered as "there between", "modeled" respectively to expedite the prosecution. Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1 and 17-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. "determining the relevance of images retrieved from a database." Applicant has left several steps before the determination step.

9. Claims 5 and 8 are rejected under 35 U.S.C. 112, second paragraph, the phrase "and/or" renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by "and/or"), thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(d). Examiner substituted with "or" to expedite the prosecution.

Claim Rejections - 35 USC § 101

10. 35 U.S.C. § 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

11. Claims 1-18 are rejected under 35 U.S.C. § 101, because none of the claims are directed to statutory subject matter. Independent claims 1, 17 and 18 merely claiming nonfunctional descriptive material, i.e., abstract ideas. Even when a claim that recites a computer that solely calculates a mathematical formula or a computer disk that solely stores a mathematical formula is not directed to the type of statutory subject matter

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eligible for patent protection. The claims are not producing useful, concrete and tangible results. See Diehr, 450 U.S. at 186 and Gottschalk v. Benson, 409 U.S. 63, 71-72 (1972).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. Claims 1, 6-8 and 11-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mojsilovic et al. (US Patent 7,043,474) hereinafter Mojsilovic, and in view of Jain et al. (US Patent 5,913,205) hereinafter Jain.

14. As per independent claim 1, Mojsilovic teaches a method for characterizing, annotating and determining image similarity based on semantic meaning of images (col. 4, lines 40-42). Mojsilovic teaches the claimed, determining the relevance of images retrieved from a database relative to a specified visual object category (Fig. 9, col. 13, lines 64-67), Mojsilovic does not explicitly teach visual object category.

However, Jain teaches the claimed, the method comprising transforming a visual object category into a model defining features of said visual object category and a spatial relationship there between, storing said model (Fig.2, col. 9, lines 30-37). Thus, it would have been obvious to one of ordinary skill in the data processing art at the time of the invention, to have combined the teachings of the cited references because Jain's teachings would have allowed Mojsilovic's method to provide a way to compare images in different schemas and to compare images faster (col. 3, lines 55-57). Mojsilovic teaches the claimed, comparing a set of images identified during said database search with said stored model and calculating a likelihood value relating to each image based on its correspondence with said model (Fig. 2, col. 8, lines 19-27). Mojsilovic and Culp do not explicitly teach ranking images. However, Jain teaches the claimed, ranking said images in order of said respective likelihood values (Fig.2, col. 9, lines 60-63).

15. As per dependent claim 6, Mojsilovic and Jain combined teaches claim 1. Jain teaches the claimed, features comprise at least two types of parts of an object (Fig.2, col. 9, lines 30-37).

16. As per dependent claim 7, Mojsilovic teaches the claimed, categories include pixel patches, curve segments, corners and texture (Fig. 15A-B, col. 23, lines 30-33).

17. As per dependent claim 8, Mojsilovic teaches the claimed, each feature is represented by one or more parameters, which parameters include its appearance and/or geometry, its scale relative to the model, and its occlusion probability (col. 2, lines 53-57).

18. As per dependent claim 11, Mojsilovic teaches the claimed, set of images is obtained during a database search (Fig. 1, col. 7, lines 26-30).

19. As per dependent claim 12, Mojsilovic teaches the claimed, selecting a sub-set of said set of images, and creating the model from said sub-set of images (Fig. 8, col. 9, lines 41-43).

20. As per dependent claim 13, Mojsilovic teaches the claimed, all of the images of said set of images are used to create the model (Fig. 8, col. 9, lines 41-43).

21. As per dependent claim 14, Mojsilovic teaches the claimed, at least two different models are created in respect of a set of images retrieved from said database (Fig. 8, col. 9, lines 41-43).

22. As per dependent claim 15, Mojsilovic teaches the claimed, selecting one of said at least two models for said comparing step (Fig. 8, col. 9, lines 41-43).

23. As per dependent claim 16, Mojsilovic and Jain combined teaches claim 1. Jain teaches the claimed, selecting step is performed by calculating a differential ranking measure in respect of each model, and selecting the model having the largest differential ranking measure (Fig.2, col. 9, lines 60-63).

24. As per independent claim 17, Apparatus for determining the relevance of images retrieved from a database relative to a specified visual object category, the apparatus comprising a processor for transforming a visual object category into a model defining features of said visual object category and a spatial relationship therebetween. This claim is rejected under the same rationale as claim 1.

25. As per independent claim 18, Apparatus for ranking, according to relevance, images of a set of images retrieved from a database relative to a specified visual object category, the being arranged and configured to a visual object category into a model defining features of said visual object category and a spatial relationship therebetween, store said model, compare a set of images identified during said database search with said stored model and calculate a likelihood value relating to each image based on its correspondence with said model, and to said images in order of said respective likelihood values. This claim is rejected under the same rationale as claim 1.

26. Claims 2-5 and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mojsilovic et al. (US Patent 7,043,474) hereinafter Mojsilovic, in view of Jain et al. (US Patent 5,913,205) hereinafter Jain, and in view of Essafi et al. (US Patent 6,642,929) hereinafter Essafi.

27. As per dependent claim 2, Mojsilovic and Jain do not explicitly teach estimating the probability. However, Essafi teaches the claimed, the step of comparing an image with said model includes identifying features of the image and estimating the probability densities of said parameters of those features to determine a maximum likelihood description of said image (Fig. 8A-B, 9A-B, col. 7, lines 56-59). Thus, it would have been obvious to one of ordinary skill in the data processing art at the time of the invention, to have combined the teachings of the cited references because Essafi's teachings would have allowed Mojsilovic's method to provide a way without splitting the image in the same domain or ranges (col. 3, lines 5-8).

28. As per dependent claim 3, Mojsilovic and Jain combined teaches the claim 1. Jain teaches the claimed, storing said model (Fig. 2, col. 9, lines 34-37).

29. As per dependent claim 4, Mojsilovic teaches the claimed, comparing a set of images retrieved from said database with said stored model and calculating a likelihood value relating to each image based on its correspondence with said model (Fig. 2, col. 8, lines 19-27).

30. As per dependent claim 5, Mojsilovic and Jain combined teaches the claim 1. Jain teaches the claimed, ranking said images in order of said respective likelihood values or retrieving further images corresponding to said specified visual object category (Fig. 2, col. 9, lines 60-63).

31. As per dependent claim 9, Mojsilovic and Jain do not teach using probability function. However, Essafi teaches the claimed, parameters are modeled by probability density functions (Fig. 8A-B, 9A-B, col. 7, lines 56-59). Thus, it would have been obvious to one of ordinary skill in the data processing art at the time of the invention, to have combined the teachings of the cited references because Essafi's teachings would have allowed Mojsilovic's method to provide a way without splitting the image in the same domain or ranges (col. 3, lines 5-8).


32. As per dependent claim 10, Mojsilovic and Jain do not teach using Gaussian probability function. However, Essafi teaches the claimed, probability density functions comprise Gaussian probability functions (col. 10, lines 63-65). Thus, it would have been obvious to one of ordinary skill in the data processing art at the time of the invention, to have combined the teachings of the cited references because Essafi's teachings would have allowed Mojsilovic's method to provide a way without splitting the image in the same domain or ranges (col. 3, lines 5-8).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sathyanarayan Pannala whose telephone number is (571) 272-4115. The examiner can normally be reached on 8:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Rones can be reached on (571) 272-4085. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Sathyanarayan Pannala
Patent Examiner

srp
October 29, 2006